

Claims

1. An apparatus for measuring deformation of a surface of a pipe comprising a detector capable of directly  
5 detecting changes in the radius of a pipe and guide(s) for guiding the detector along the pipe in a direction parallel to the longitudinal axis of the pipe, whereby an output related to the deformation of the pipe surface is derived from the output of the detector.
- 10 2. An apparatus as claimed in claim 1, wherein the detector is arranged to measure the distance between a region of the pipe adjacent the detector and a part of the apparatus.
- 15 3. An apparatus as claimed in claim 2, wherein the detector is arranged to be placed in contact with the surface of the pipe and is moveable in the radial direction of the pipe such that the deformation of the  
20 pipe surface may be determined from the displacement of the detector.
4. An apparatus as claimed in claim 1, 2 or 3, wherein the detector comprises a rotatable member that is  
25 arranged to roll over the surface of the pipe.
5. An apparatus as claimed in any preceding claim, wherein the guide(s) comprise magnet(s) arranged to hold the apparatus in position against a steel pipe.
- 30 6. An apparatus as claimed in any preceding claim, having a plurality of guides, the guides comprising rotatable members spaced apart from the detector and arranged to contact a surface of the pipe when the  
35 detector is in contact with the pipe.

7. An apparatus as claimed claim 6, wherein a said guide is provided on each side of the detector, the rotatable members of the guides and the detector being positioned substantially along an arc, and the distance  
5 between each said rotatable member of the guide and the detector being smaller than the radius of the arc.

8. An apparatus as claimed in claim 7, wherein the rotatable member of the detector is movably mounted on a  
10 housing and each guide member is mounted on an arm extending laterally from the housing.

9. An apparatus as claimed in any preceding claim comprising measurement means for measuring the  
15 displacement of the rotatable member of the detector in relation to the housing.

10. An apparatus as claimed in any preceding claim wherein said apparatus further comprises transporting  
20 means to transport the detector means along the pipe.

11. An apparatus as claimed in any preceding claim, arranged to measure the distance traveled by the apparatus along the pipe.  
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12. An apparatus as claimed in claim 11, wherein the distance traveled is determined by measuring the number of rotations of a rotatable member engaged with the pipe.  
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13. An apparatus for detecting deformation of a surface of a pipe comprising:

(i) a detector capable of detecting changes in the radius of a pipe when placed in contact with the surface  
35 of the pipe, said detector means being moveable in the radial direction of the pipe at the point of contact;

(ii) a guide assembly capable of guiding the

detector along the surface of the pipe in a direction parallel with the longitudinal axis of the pipe; and

(iii) measurement means capable of measuring the radial displacement of the detector, whereby to produce  
5 an output related to the deformation of the pipe surface.

14. A method of measuring the deformation of surface of a pipe using the apparatus as claimed in any preceding  
10 claim.